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Outdoor Facts

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THE PHEASANT CROWING COUNT CENSUS AND FACTORS AFFECTING ITS RELIABILITY [1]

Game managers are fortunate that the rooster pheasant feels compelled each spring to loudly advertise his irresistable presence to the ladies of the species. His two-syllable crowing may appear to lack sex appeal but it forms the basis for the most accurate and practical pheasant survey tool available today.

The use of the pheasant crowing count to derive a population index was reported in 1949 by J. W. Kimball. Three years later Colorado biologists, noting some variance in their findings compared with Kimball's, instigated a study designed to modify the the technique for eventual use in a Statewide census system. This discussion of the effect of various factors on pheasant crowing is based on Colorado investigations concluded by Swope and Grieb (1953) and Booker (1954).

Seasonal Crowing Intensity. - Consistent crowing activity normally begins near the end of March and terminates in July. Call intensity tends to reach a plateau near mid-April, and remains fairly constant until mid-June. This explains the procedure recommended in Colorado's inventory program that all crowing counts should be made between April 20 and June 10 (Fig. 1).

Daily Crowing Activity. - Persistent crowing usually starts one hour prior to sunrise, reaches a peak 10 to 20 minutes later, then gradually tapers off. The hour of greatest calling intensity appears to be from 50 minutes before sunrise to 10 minutes past. Decline in calls heard after sunset may be partially attributed to increased listening interference, as other living creatures become active (Fig. 2).

Sex Ratio. - The ratio of hens to cocks very definitely affects crowing intensity. Individual rooster observations made in Colorado (Swope, 1964) showed a direct correlation between the crowing interval and the number of hens with the calling cock. These data are tabulated on the next page.

[1] Contribution from Federal Aid Project W-37-R.

No. of hens with calling rooster	No. of observations made	Time interval between calls
0	77	2:05
1	34	3:33
2	45	4:11
More than 2	27	5:33

This phenomenon does not appear significant when spring sex ratios remain constant from one year to the next, as they normally do. If a drastic change does occur in the sex ratio; however, this factor must be evaluated and compensations made.

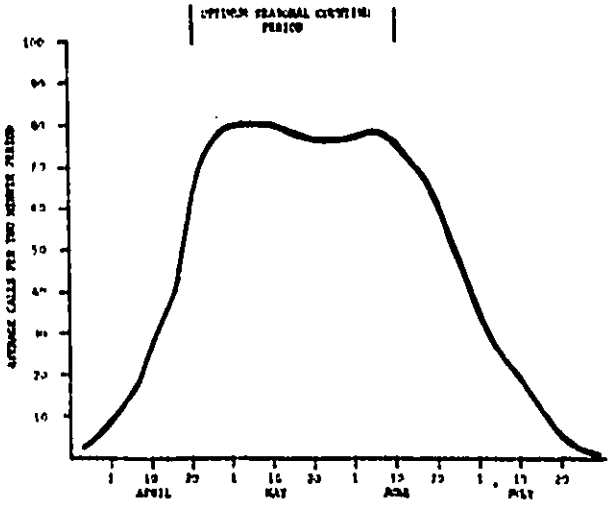

Fig. 1. Seasonal influence on pheasant crowing activity in eastern Colorado.

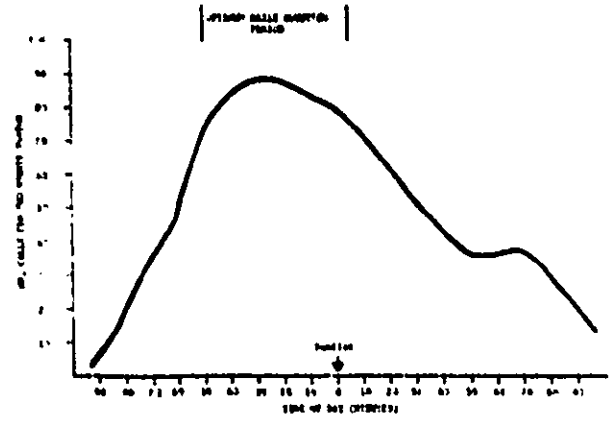

Fig. 2. Typical daily pheasant crowing activity, eastern Colorado.

Listening Interference. - The influence of an almost unbelievable variety of sounds, that result in less than perfect listening conditions, is difficult to evaluate. Errors precipitated by these sounds do appear to be compensating. Humming wires, the roar of [illegible] singing birds, bawling cattle, [illegible] dure used in Colorado, which takes only the high number of calls on each station from every count made, tends to eliminate low values that may have resulted from listening interference. The crescendo of listening interference following sunrise makes it imperative that counts be completed soon thereafter.

In certain of Colorado's dryland pheasant ranges deep-well irrigation is becoming a common practice. When spring rainfall is deficient the irrigation pumps are frequently run all night. These pumps can be heard from six to eight miles away on a calm morning and may play havoc with a carefully plotted crowing route. On at least one occasion it has been necessary to change the course of an established route on mornings when the pumps are in action. A growing use of pump irrigation may someday make the use of the crowing count impractical in affected areas.

Weather Factors. - The influence of weather on crowing intensity is not fully understood; however, some information is available in this regard.

Wind may or may not affect crowing, but at velocities exceeding four miles per hour it certainly restricts the reception of calls by the observer. Counts should not be made when wind velocities exceed four miles per hour.

Temperatures below seasonal norms appear to exert a negative influence on crowing activity prior to the peak of call intensity. The role of temperature is not completely known, but its effects on crowing apparently decline as call intensity increases in the spring. The warmer mornings should be selected in this early spring period for optimum counts.

Precipitation during the crowing count has been found to substantially decrease the number of calls heard by the observer. Often a count made following a light rain is a good one; however, additional information is needed to predict the influence of humidity on pheasant crowing.

Cloud cover appears to affect primarily the time the crowing peak is reached. On overcast mornings crowing is delayed and prolonged. When such conditions are encountered the count should be started slightly later in the morning.

A rising or steady barometer during the 24 hour period prior to the count often results in more calls. Conversely, dropping barometric pressure usually results in fewer calls.

Variable listening ability of observers. - Audio perception varies with individuals and would seem to seriously threaten the accuracy of a census method dependant upon sound. It has been frequently demon- [illegible]

racy takes practice and intense concentration. Beginners applying this technique are likely to vary considerably in the number of calls recorded. It is certainly desirable, from the standpoint of accuracy, to have *one observer* conduct this census on a specific route from one year to the next.

One big advantage of the pheasant crowing count technique is the elimination of the visual error where dense vegetation results in more birds, but makes them harder to see. Admittedly it is a test of courage to grope one's way out of bed at 3:00 A.M. to listen to the squawking antics of a cantankerous bird. However, if *these surveys are made in a consistent manner*, under comparable conditions, the useful population data obtained will be ample reward.

LITERATURE CITED

Boeker, H. M. 1954. Evaluation and statistical analysis of the pheasant crowing count census method. Colo. Game and Fish Dept., Fed. Aid Div., Quart. Prog. Rept., July:41-48.

Kimball, J. W. 1949. The crowing count pheasant census. J. Wildl. Manage. 13(1):101-120.

Swope, H. M., and J. R. Grieb. 1953. Evaluation and statistical analysis of the pheasant crowing count census method. Colo. Game and Fish Dept., Fed. Aid Div., Quart. Prog. Rept., January:87-96.

Swope, H. M. 1964. Pheasant population studies. Colo. Game, Fish and Parks Dept., Fed. Aid Div., Game Res. Rept., April, Part 2:87-93.

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